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THE NATIONAL OBSERVATORY.

Standard Time and How It Is Transmitted—A Union of the King of Clocks with the Queen of Telegraphs—How the Want of Mechanical Accuracy Has Been Overcome—A Telegraphic Wonder—Plans for the Future.

[Correspondence of the Chicago Inter-Ocean.]

WASHINGTON, Aug. 27, 1873.—The establishment of a "standard of time" all over the Union—that is, the question of time as determined by the observations at the National Observatory in Washington and regulated by the longitude at a given place—is rapidly becoming a fixed fact. And there are, indeed, few matters in which the general public are, or ought to be, more interested, "Correct time" is a desideratum which has hitherto been well-nigh unattainable, for what one considered correct was by another considered the reverse. Watches and clocks well regulated (in the opinion of their owners) were the only thing to go by; and accurate as a Jurgensen chronometer or Nardin clock may be (not to speak of American watches, which have, of late, acquired a deserved reputation for excellence), yet there are mechanical conditions which it is impossible to overcome, and which make even the best clock that was ever constructed unreliable on this most important point, except by astronomical comparison and regulation.

IMPOSSIBILITY OF MECHANICAL ACCURACY.
For example: the clock which now gives the standard of time for Washington and New York, and which, without a doubt, one of the finest and most accurate clocks in the country, and in the world, is fifty-five seconds fast. True, that it has been over three years in getting that much ahead; but it is ahead, nevertheless. Consequently, when the time is telegraphed, automatically, to the office of the Western Union Telegraph Company in New York, which is every day at 12 o'clock (noon), the second hand on this standard time-keeper points fifty-five seconds, or nearly one minute, past noon. This shows that even if this exemplary clock was taken as giving the correct time of the place (exactly in the Washington meridian) where it is located, it would not give the exact time. What shall be said then of clocks of ordinary construction, or of even extraordinary construction elsewhere, if reliance were to be placed wholly upon them? It would, therefore, be inexpedient to put entire faith in these mechanical contrivances, however excellently they may be made. But by having one clock, as perfect a one as it is possible for human ingenuity to make, and comparing the time shown by it every day with observations of the sun when it passes meridian, and then transmitting the time accordingly, by the electric current, bringing all "standard" clocks under the control of this one, as regards subdivisions of time, then the standard of time may be simultaneously communicated to a number of places, located at great distances from each other, and from the controlling influence at Washington.

THE STANDARD OF TIME.
The manner of accomplishing this was shown and explained to me during a recent visit to the United States Naval Observatory in this city. I commenced my explorations by making inquiries concerning this "standard time" business, about which I had of late heard a good deal; and as your readers will doubtless like to hear something about it too, as Chicago, within a very short time, will be in the electric ring, I will go on to explain this as it was told to me, prior to describing other interesting features in connection with the establishment.

The first practical movement toward establishing a fixed standard of time for the United States was undertaken about six months ago by General Acker, of the Western Union Telegraph Company, in conjunction with the authorities of the Naval Observatory. It was evident that in order to insure unfailing distribution of the time all over the Union, the wires of that line must be used, as the communication of the central time could not depend for transmission upon one wire alone, which is liable to be broken or disturbed by storms or other influences.

In consideration of making their offices in various leading cities headquarters for the distribution of correct time this company, therefore, offered to transmit the time when the sun passes meridian at the observatory in Washington, free of charge. Two large chronometers of superior workmanship were purchased by the company, and were placed, one above the other, in the New York central office of the company. One of these chronometers was set so as to show the Washington mean time exactly (this being easily ascertained by means of the telegraph), and the other was put twelve minutes and twelve seconds ahead, which is the difference between the two cities, so as to show New York mean time. If these chronometers would keep the time as does the standard clock in Washington, occasional comparison between the two cities would be all that would be required; but daily comparison has shown that these clocks, excellent though they are, are influenced by atmospheric and other changes, and vary from 1-10 to 1-100 part of a second each day. To get the exact time, therefore, a daily report is sent from the observatory in Washington in the following manner.

THE APPARATUS.
Beneath the pendulum of the observatory clock is located a small glass cup or insulator. In the middle of which there is a small column of steel about half an inch in height. This column, at its lower part, where it is inserted into the cup, communicates with a copper wire spun over with fine silk, the other end of which goes out of the bottom of the clock, through the floor, and to a galvanic battery below. At the top of the steel column is a small oblong excavation about the size of a grain of wheat. Into this is dropped a globe of mercury, sufficiently elevated by its inherent cohesion above the edges of the small steel receptacle to permit a steel point which is attached to the bottom of the pendulum, to just touch it as it vibrates to and fro. From the top of the pendulum an insulated copper wire reaches direct to the office of the Western Union Telegraph Company in Washington, where it communicates with one of the New York wires. This same wire again communicates with an electric bell in the New York

office, which is placed directly in front of the two chronometers, and also with a small mahogany case placed under each of them. These cases serve as coverings for the respective pendulums. Each pendulum is provided with a small round steel bar placed at right angles or crosswise to the pendulum, and as this swings to and fro, either projecting end of the steel bar enters one of two hollow coils of wire which are placed one at each side of the outside regulating wire. By the electric current, these wire coils become magnets every time the current, by the completion of the circuit, passes through them, and, therefore, for a given time retain the pendulum. But the electric circuit is just completed as often and every time the bottom of the pendulum of the observatory clock at Washington touches the little ball of quicksilver; and the chronometers, though located many miles apart, must therefore of necessity tick together. In other words, after the clocks are once set, giving the exact time of New York and Washington respectively, the Observatory clock at the latter place will regulate them both with unerring accuracy.

When pressure of business prevents the use of a separate wire for the continuous connection of the clocks, the circuit is broken by disconnecting the clock wires, and the wire is used for the transaction of ordinary business the same as any other land wire. But no matter how great the pressure of business may be, every day at 11:55 o'clock (Washington time) all business is laid aside for that particular wire, and it is connected with the clocks in the New York office, and held in readiness to transmit the time. It is also in the same manner brought in connection with the electric telegraph bell. At 11:58 o'clock the circuit is completed by the connection, at the observatory in Washington, of the galvanic battery with the copper wire which emerges from the steel column underneath the pendulum, and from that moment the three clocks will tick in exact unison, while the electric bell will announce the seconds in the same manner. At the exact hour of noon in Washington, by an adjustment of the pendulum, two strokes are made upon the bell, and repeated every second for one minute afterward. The wire may then again be disconnected, if necessary, and the usual business be transmitted over it until the next day at 11:55 o'clock.

Clocks of this description will be located at Chicago, St. Louis, Milwaukee, Cleveland, Memphis, Buffalo, Erie, Albany, and other leading cities, while from them connections will be made with the observatory clock in Washington. It is contemplated to embrace a number of smaller towns and cities within the circuit, which will ultimately be extended to San Francisco. The record of time obtained at the latter city from the observatory in Washington will be exact, as the loss of time, or rather the length of time occupied by the electric current in traveling 7,000 miles is only three-tenths of a second, for which allowance may easily be made by computation of the time. By again connecting the clocks at these large cities with clocks in smaller towns and cities, the "standard of time" may be distributed throughout the United States to such an extent that there will positively be no excuse for not being always able to tell exactly "what time of day" it is.

And now about the wonderful king of clocks, which is to control such a number of subordinates in so important a matter. Suppose, after everything has been arranged and is working charmingly, that clock should suddenly stop! Would all the other clocks stop at the same precise moment, or would they run on on their own account and perform all manner of tricks? Who can estimate the consequences that might ensue? Well, the probability is that no great disarrangement of things and matters could follow; but such an event is not at all likely to occur. Since 1845 this clock has been in constant use, and is only stopped every tenth year to be cleaned. It is a large pendulum clock, of the kind known as "astronomical," with a silver dial and self-regulating mercury pendulum. It is inclosed in a dark mahogany case, with glass windows in the front exhibiting the dial and pendulum, while the works are covered in a sealed case to prevent dust from getting in. The clock, which, with the case and pendulum is about five feet in height, does not stand upon the floor, but is attached, by means of clamps, to a solid square granite pillar weighing some fifty or sixty tons, which passes through the floor without touching it, and through the cellar and earth below until it reaches the solid rock. This is done to prevent any movement in the building such as people walking on the floors and staircases, from jar-ring the clock, which is as motionless as the rock upon which it rests. It is placed in a corner of the "chronometer room," in the east wing of the building, where it is in the shade, and the stone pier to which it is attached is surrounded by a substantial railing or balustrade, to prevent contact with the clock. Nothing short of an earthquake could cause this distinguished member of the clock family to lose its equilibrium: "tick, tick, tick, tick," it has told off the seconds and the hours in times of war and times of peace, and will do so doubtless, for many years to come.

This mechanical wonder was made by the celebrated firm of Parkinson & Frodsham, of "Change alley, London. It is wound up every eight days by the officer in charge of the chronometer room, and is each time wound up at precisely the same hour, minute and second. There is another clock, used in making certain astronomical observations, and held in reserve if any accident should befall the Frodsham. This was made by Bond, in Boston, and is very nearly as accurate as the celebrated English clock which gives us the American standard of time.

REGULATING CHRONOMETERS.

To furnish the exact time is not the only important task which devolves upon this clock, as we shall presently see. There are in the same room with it a number of heavy, closed boxes, arranged in rows and hollow squares, all securely locked. These contain the chronometers of the navy, used on our men-of-war when in commission, and there are, in these cases about 200 of them, every one of which is regularly wound up and kept going. Not all of these, however, are the property of the navy; some are here on trial and belong to the manufacturers, as the law demands that every chronometer shall be tested for a certain length of time before it is purchased. There are here chronometers of all kinds, of almost every famous make, and from every country. They are all kept constantly going and regulated by means of the standard clock in the corner;

and a careful record is kept of each, showing precisely how much it gains or loses in a given period. To facilitate the regulation of these chronometers a very simple but clever contrivance is brought into play. By touching a spring on the standard clock the vibrations of the pendulum are audibly recorded by the taps of an electro-magnet at regular intervals of one second. It would, of course, be impossible for the observer to have his eyes on the second dial of the standard clock and on that of the chronometer he is about to compare with it at the same time; but by this arrangement he is enabled to follow with his eyes the motions of the second hand of the chronometer, while his ear tells him if these motions correspond with those of the pendulum and second hand of the large clock. In this manner he goes, every day, through all the chronometers, comparing each with the standard clock, and making up their record. When a ship of the navy goes to sea a regulation is sent for its chronometers to this place; and only such are issued as have been thoroughly tested. A statement is furnished with each, which gives the amount of time gained or lost in a given period, so that in making observations and deductions the deviation in the chronometer may be rectified. As the safety of a ship to a great extent depends on its chronometers, the importance of having them as near absolutely correct and exact as possible will, of course, be seen; and that explains the great care taken of them and the reason why their records must be kept with such unflinching accuracy. To Commander James H. Gillis is at present intrusted the care of these delicate instruments and of the "standard of time," and no one else is permitted to touch the clock and chronometers, or the telegraph apparatus in connection therewith.

How a Woman Triumphed Over a Swindling Landlord.

Olive Harper writes from Vienna to the *Alta California*:

"They have an abominable custom here of requiring two weeks' notice whenever a person desires to leave their room. It is done, I think, to fleece foreigners, for this law is never told until you get ready to leave.

My rooms are situated in a very unhealthy part of the city, which I did not know at first. I paid a month in advance when I came, and I have been half ill all the time. The doctor said the land was too low; that this is a swamp land, partly reclaimed, and I must go upon the hill to live. So I looked for rooms, and determined to move. I never thought of it until within three days of the end of the month, and then told the landlord. He rented the rooms that afternoon to another party, to be occupied as soon as I found leave. When I got ready to go I found I had not given "warning," and I must pay for two weeks' rent if I left, or have my baggage detained till I did pay. I left my baggage and went to a gentleman, and asked about the law, and found I had no redress. I must pay for the rooms for two weeks, but if I chose, I might stay in them till the end. I did, I paid, and told the landlord I would stay. He did not like that, and his other tenants had paid him; and if he failed to keep his promise with them he would lose a tenant for three months. Then he told me I might go. I said I was in no hurry. I had paid for the rooms, and I should occupy them. The people sent their things. He danced. Then he came and offered me my money back if I would leave. I declined. He offered me ten guineas more to go, and I wouldn't. His new tenants came, and I didn't like the looks of them, and concluded they had too much money to let him have the swing, so I concluded that I would remain where I am. The family said: "This is all very extraordinary," and I said, "Not at all."

The woman said: "We have paid for these rooms."

I said, "So have I, and I propose to retain them."

She sat down on the sofa and fanned herself, and I rung the bell and told Anna to bring the lady some water and to open the middle door, and then I went to writing, telling her I was busy.

In the meantime the landlord was out in the hall arguing with the man and his daughter. She insisted upon staying because of the piano.

The old gentleman came in and said: "Madam, the landlord has told me how the case stands, and I will give you ten guineas, and he will give you ten guineas, and return your rent if you vacate these rooms. They are the only ones I have seen that exactly suit me. What do you say? Come now."

"I say, I will not vacate them for all the money you and he both have got; that is all I have to say," and then I commenced to write again. He left with his family. Herr Nimmacher is falling away, and I am regaining my lost health. Anna is my friend, and she said the people are still anxious, and have been here to get them when I go, but she never tells the old man, and I shall not move till I leave Wien. So you see the great American eagle is again triumphant.

—Pumpkin Pie.—Cut the pumpkin into thin slices, and boil until tender in as little water as possible; watch carefully that it does not scorch; drain off all the water, putting the stew-pan on a warm part of the stove, that it may dry off the moisture, for ten or fifteen minutes. Mash, and rub through a sieve, adding, while warm, a small piece of butter. To every quart of the pumpkin, after mashing, add one quart of new milk and four eggs, the yolks and whites beaten separately. White sugar to taste, and cinnamon and nutmeg as desired; a very little brandy is a great improvement. The oven they are baked in must be hot, or they will not brown. It is as well to heat the butter scalding hot before pouring into the pie-dishes.

—The saving in cutting hay, straw, and other fodder is equal to about one-third of the consumption both of hay and meal. The food is eaten without waste, and is more perfectly digested, and it is the food that is digested, and not alone that which is eaten, which counts as nutriment. Cattle should be fed three times a day. Little and often is better than "semi-occasional."

On the Brink of the Chasm of the Colorado Canyon.

As soon as we had eaten lunch, after our arrival at the last mentioned point, we proceeded to the brink of the canyon. Our view was obstructed by cliffs or gulches till we arrived almost at the very edge of the abyss, so that our first sight of it revealed it in all its mighty grandeur. We had looked across, and seen the top of the wall on the opposite side. We had, indeed, seen as much as that when we were at Pipe—not the wall at To-ro-weap, but further up the canyon. But we had no view which gave us any idea of the vastness of the chasm. When we were one hundred yards away a sharp bend in the course of the stream appeared before us, and the gorge suddenly opened, almost as if the very crust of the earth had been instantly rent asunder. We stop and gaze in awestricken silence upon the wonderful spectacle. But still we do not yet comprehend, in the fullness of its power, the grand scene, nor have we all of it before our eyes. We go forward to the very edge, and, creeping out on a projecting cliff, look directly down upon the river, raging in its rocky bed three thousand feet beneath our standing place. Although the river has a volume equal at least to the Ohio at Cincinnati, so distant is it that we see but a mere ribbon of sheen, like a little rivulet or creek. An object the size of a man by the water's edge, I am told, is invisible from our point, except as a speck before the eye, which cannot be distinguished as an object. Yet the water rushes along with such force that its motion can be seen, and what appears to be only ripples on its surface, Mr. Hillers, who came through the canyon in one of the boats, tells me are huge waves and swift rapids that hurry along with tremendous speed and a deafening roar that is terrible to the ear. This is easy to believe, for the roar of the dashing torrent bounds and echoes from wall to wall, reaching the point where we stand, intensifying the impression on the sense of sight. We seem to stand directly over the river, but when we come to consider and examine, we find that we are at least 300 or 400 yards back from the water's edge. The opposite wall recedes in the same manner. The walls do not, however, recede by a regular angle, or inclination, but by a series of steep terraces, some very narrow and some quite wide. Between the terraces they shoot up perpendicularly hundreds of feet at a single leap. We judge the chasm to be 1,800 to 2,000 feet across at the top from where we stand, so it can be perceived that the angle of inclination from bottom to top is very slight. We spent the whole of the afternoon wandering about the verge of the canyon, selecting the most favorable points of view, receiving momentarily new revelations of magnitude, and new impressions of grandeur.—*Cor. New York Times.*

The Protection by Smoke Against Frost.

The efficiency of smoke as a protection against early frosts in the autumn and late frosts in the spring, has long been known to horticulturists and market gardeners. Last season, numerous experiments were made under the auspices of the Society of Agriculture of France for creating artificial clouds by burning coal tar and other substances in suitable vessels, at short distances from each other, to the windward of the plants to be protected and sufficiently distant that the fumes be evenly spread. In the South of France the greatest success has been reported in the protection of the grape vines, by lighting the fires as soon as the grass shows signs of frost, and allowing them to burn until an hour after sunrise. While this means would apply to plants rising some distance from the ground, those nearer the surface should be protected before the frost point is reached at the surface. As soon as the sun is fully upon the earth, the smoke may be discontinued.

In the autumn, we in the West often have one or two killing frosts and thereafter the weather for several weeks, and we have cheaply protected melons, tomatoes, egg-plants, okra, and other very tender plants by means of moist litter placed near and in the direction from whence the wind comes, lighting the heaps toward morning and allowing them only to smoke.

Tender flowers and foliage plants, as dahlias, Rhinuses, etc., may also be kept in full beauty and will pay well for the trouble. In this case, vessels must be had and gas tar or some such substance used, since blackened spaces, occasioned by burning on the ground are not highly ornamental. The philosophy is clear. The smoke, like thick clouds at greater height, simply prevents the radiation of heat. Wind, also, has the same effect of preventing the action of frost, unless the temperature go below 30°, or actual freezing point. This is due partly to the prevention of the formation of dew, and partly to the fact that the wind mixes the warm and cold air. In still weather it is well known that along a hillside there will be a streak where there is no frost, while above and below the frost will collect.—*Western Rural.*

MEDICAL DEPARTMENT, UNIVERSITY OF LOUISVILLE.—We give in another column the announcement of the medical department of the University of Louisville. This is one of the oldest, best established and most renowned medical schools of our country. Many of the most distinguished American physicians are graduates of the University of Louisville.

Its faculty is able and its means of instruction very ample. We cordially commend this school to all medical students who would avail themselves of a first-class institution in a delightful city.

No use of taking the huge, offensive, gripping, drastic pills, put up in cheap wood or paste-board boxes, when Dr. Pierce's Pleasant Purgative Pellets, or Tasteless, Coated, Concentrated Root and Herbal Juice, Anti-Bilious Granules—scarcely larger than mustard seeds—possess as much power as any large pills, and neatly put up in little vials that preserve their virtues unimpaired for any length of time, in any climate can be had for 25 cents of all Druggists. 657

—That aged and respectable old woman isn't plying bed-quilts or knitting stockings any more, but has gone to cutting tan-bark. She averages five cords per day, and they say she can drink from a two-gallon jug without coughing.

CONTAGIOUS diseases, such as horse all, glanders, etc., may be prevented by the use of Sheridan's Cavalry Condition Powders. Persons traveling with horses should take note of this.

Matrimony.

All young men and most young women are interested in this subject, as it is a condition in life to which all look forward, and hope to obtain, but if a young man is wise he will not take upon himself the responsibilities of married life until he is in a condition to provide to a certain extent for his wife and children when he is called away from them. In all cases this can be done by means of a policy of Life Insurance, a moderate annual payment giving the family of the insured comparatively a large amount at his death. One of the safest and best of these Companies is the Penn Mutual Life Insurance Company, of Philadelphia. Policies may be obtained, or agencies secured by application to the home office, or to J. W. Fredell, Jr., Superintendent of Western Agencies, 78 West 3d Street, Cincinnati, Ohio.

Cholera and Pain-Killer.

PERRY DAVIS' PAIN-KILLER.—This unparalleled preparation is receiving more testimonials of its wonderful efficacy in removing pains, than any other medicine ever offered to the public. And these testimonials come from persons of every degree of intelligence, and every rank of life. Physicians of the first respectability, and perfectly conversant with the nature of diseases and remedies, recommend this as one of the most effectual in the line of preparations for the cure of Cholera, Cholera Morbus and kindred bowel troubles now so common among the people.

TRY IT.—A Tonic and Alternative medicine, the invigorating and regulating properties of which actually lengthen life, and add to the capacity of its enjoyment, is within the reach of every member of the community. No invalid who has had recourse to Dr. WALKER'S VINEGAR BITTERS will hesitate to concede to it these invaluable qualities. It is a stomachic and a corrector of unrivaled efficacy, yet being free from alcohol, it is not an excitant. Its anti-bilious operation is more direct, speedy and certain than that of any of the dangerous mineral salivants, and as an aperient, it gently removes any obstructions that may have accumulated in the lower intestine, without producing either irritation or pain. In fact, its wonderful remedial effects are unaccompanied by any drawback. Of all the medicines, it is the most harmless and salutary. As an appetizer, it is far ahead of any of the alcoholic nostrums that momentarily stimulate the palate; while as a means of renovating a weak and torpid stomach, it stands alone among modern remedies.

The National Life Insurance Company of the U. S. A., charges three-fourths the usual rates for life insurance, and as no other company in the world does, guarantees their sufficiency by a capital of one million dollars, paid by its stockholders. It wants agents everywhere. E. A. Rollins, President; Jay Cooke, Chairman Finance Committee, Philadelphia.

If your furnisher has not kept the Elmwood and Warwick collars, tell him to get you some when he buys his full stock of goods. You will find them better than any you have ever worn.—*Con.*

MISSIONARIES and other sojourning in foreign lands should not fail to take with them a good supply of *Johnson's Steady Liniment*. It is the most reliable medicine for all purposes there is in the world.

ONE of the most beautiful and popular songs of the day is the song and chorus entitled "Maudie More" by Aileen Percy. Published by E. A. Samuels, Boston. Send thirty cents for it; it is well worth it.

The best thing for Harness is the celebrated Frank Miller's Harness Oil.

Best and Oldest Family Medicine.—Send for a free trial bottle of *Dr. Chamberlain's Colic, Cholera and Diarrhoea Remedy*. Constipation, Biliousness, Sick Headache, Malaria Attacks, and all derangements of Liver, Stomach and Bowels. Ask your Druggist for it. Beware of imitations.

HABITUAL, or Temporary Costiveness may be gotten rid of, and with it a great source of serious disease permanently removed, by using judiciously Dr. Jayne's Sensitive Pills.

The more inveterate and unmanageable a case of Ague may prove, under ordinary treatment, the more striking is the immediate benefit of Shallenberger's Pills.

PEERLESS CLOTHES WEINGEL.

THE MARKETS.

NEW YORK, Sept. 18, 1873.		
BEEF CATTLE—Native	9.50	12.50
HOGS—Dressed	7.00	7.50
SHEEP—Live	5.50	5.20
COTTON—Middling	20	20 1/2
WHEAT—No. 1	1.32	1.34
WHEAT—No. 2	1.27	1.28
WHEAT—No. 3	1.22	1.23
WHEAT—No. 4	1.17	1.18
WHEAT—No. 5	1.12	1.13
WHEAT—No. 6	1.07	1.08
WHEAT—No. 7	1.02	1.03
WHEAT—No. 8	0.97	0.98
WHEAT—No. 9	0.92	0.93
WHEAT—No. 10	0.87	0.88
WHEAT—No. 11	0.82	0.83
WHEAT—No. 12	0.77	0.78
WHEAT—No. 13	0.72	0.73
WHEAT—No. 14	0.67	0.68
WHEAT—No. 15	0.62	0.63
WHEAT—No. 16	0.57	0.58
WHEAT—No. 17	0.52	0.53
WHEAT—No. 18	0.47	0.48
WHEAT—No. 19	0.42	0.43
WHEAT—No. 20	0.37	0.38
WHEAT—No. 21	0.32	0.33
WHEAT—No. 22	0.27	0.28
WHEAT—No. 23	0.22	0.23
WHEAT—No. 24	0.17	0.18
WHEAT—No. 25	0.12	0.13
WHEAT—No. 26	0.07	0.08
WHEAT—No. 27	0.02	0.03
WHEAT—No. 28	0.00	0.00
WHEAT—No. 29	0.00	0.00
WHEAT—No. 30	0.00	0.00
WHEAT—No. 31	0.00	0.00
WHEAT—No. 32	0.00	0.00
WHEAT—No. 33	0.00	0.00
WHEAT—No. 34	0.00	0.00
WHEAT—No. 35	0.00	0.00
WHEAT—No. 36	0.00	0.00
WHEAT—No. 37	0.00	0.00
WHEAT—No. 38	0.00	0.00
WHEAT—No. 39	0.00	0.00
WHEAT—No. 40	0.00	0.00
WHEAT—No. 41	0.00	0.00
WHEAT—No. 42	0.00	0.00
WHEAT—No. 43	0.00	0.00
WHEAT—No. 44	0.00	0.00
WHEAT—No. 45	0.00	0.00
WHEAT—No. 46	0.00	0.00
WHEAT—No. 47	0.00	0.00
WHEAT—No. 48	0.00	0.00
WHEAT—No. 49	0.00	0.00
WHEAT—No. 50	0.00	0.00
WHEAT—No. 51	0.00	0.00
WHEAT—No. 52	0.00	0.00
WHEAT—No. 53	0.00	0.00
WHEAT—No. 54	0.00	0.00
WHEAT—No. 55	0.00	0.00
WHEAT—No. 56	0.00	0.00
WHEAT—No. 57	0.00	0.00
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WHEAT—No. 60	0.00	0.00
WHEAT—No. 61	0.00	0.00
WHEAT—No. 62	0.00	0.00
WHEAT—No. 63	0.00	0.00
WHEAT—No. 64	0.00	0.00
WHEAT—No. 65	0.00	0.00
WHEAT—No. 66	0.00	0.00
WHEAT—No. 67	0.00	0.00
WHEAT—No. 68	0.00	0.00
WHEAT—No. 69	0.00	0.00
WHEAT—No. 70	0.00	0.00
WHEAT—No. 71	0.00	0.00
WHEAT—No. 72	0.00	0.00
WHEAT—No. 73	0.00	0.00
WHEAT—No. 74	0.00	0.00
WHEAT—No. 75	0.00	0.00
WHEAT—No. 76	0.00	0.00
WHEAT—No. 77	0.00	0.00
WHEAT—No. 78	0.00	0.00
WHEAT—No. 79	0.00	0.00
WHEAT—No. 80	0.00	0.00
WHEAT—No. 81	0.00	0.00
WHEAT—No. 82	0.00	0.00
WHEAT—No. 83	0.00	0.00
WHEAT—No. 84	0.00	0.00
WHEAT—No. 85	0.00	0.00
WHEAT—No. 86	0.00	0.00
WHEAT—No. 87	0.00	0.00
WHEAT—No. 88	0.00	0.00
WHEAT—No. 89	0.00	0.00
WHEAT—No. 90	0.00	0.00
WHEAT—No. 91	0.00	0.00
WHEAT—No. 92	0.00	0.00
WHEAT—No. 93	0.00	0.00
WHEAT—No. 94	0.00	0.00
WHEAT—No. 95	0.00	0.00
WHEAT—No. 96	0.00	0.00
WHEAT—No. 97	0.00	0.00
WHEAT—No. 98	0.00	0.00
WHEAT—No. 99	0.00	0.00
WHEAT—No. 100	0.00	0.00